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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,606	09/08/2003	David A. Beauchaine	039035/261789	1765

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EXAMINER	
LEUNG, JENNIFER A	

ART UNIT	PAPER NUMBER
1764	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/657,606	BEAUCHAINE ET AL.	
	Examiner	Art Unit	
	Jennifer A. Leung	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1:704(b).

Status

1)☒ Responsive to communication(s) filed on *18 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *1-11 and 20-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-25* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment submitted on July 18, 2007 has been received and carefully considered. Claims 1-11 and 20-25 are withdrawn. Claims 12-19 are under consideration.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 12-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Cecil et al. (US 3,536,522).

Regarding claims 12, 14, 18 and 19, Cecil et al. (see Figure; column 2, lines 31-62; column 3, line 65 to column 4, line 54) discloses an apparatus comprising:

a vessel (i.e., a cylindrical quartz vessel **25**) defining an inlet (i.e., at nipple **27**) and an outlet (i.e., at nipple **26**);

a plurality of pieces of an oxidizable material (i.e., a particulate bed of silicon **24**) disposed within the vessel **25**, wherein the material is selected so as to oxidize upon exposure to oxygen in the gas such that the gas exiting the vessel through the outlet has less oxygen than the gas entering the vessel through the inlet (see column 4, lines 4-11); and

a heater (i.e., electrical resistance coil **31**) in thermal communication with the vessel **25** to heat the plurality of pieces of oxidizable material **24**.

The newly added limitation of the heater being, "configured to increase a temperature of

said plurality of pieces of the oxidizable material as an oxide layer formed upon said plurality of pieces of the oxidizable material also increases," adds no further patentable weight to the claim, since a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Regarding claim 13, the apparatus of Cecil et al. meets the claim, because silicon **24** is a material in which a resulting oxide layer is etchable upon exposure to an etchant, as defined by Applicants (for example, see Specification page 4, last paragraph). Please note that the resulting oxide layer and the etchant are not considered part of the apparatus.

Regarding claim 15, the plurality of pieces of oxidizable material **24** are of different sizes (i.e., particles having diameters ranging from ¼" to 100 microns, see column 3, lines 69-72).

Regarding claims 16 and 17, heater **31** is proximate to and at least partially surrounds the vessel **25** (see Figure), and heater **31** is capable of maintaining the material **24** at a temperature between about 600 °C and 1200 °C (see column 3, lines 72-75; column 4, lines 24-34).

Instant claims 12-19 structurally read on the apparatus of Cecil et al.

3. Claims 12-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al. (US 5,213,767).

Regarding claims 12 and 14, Smith et al. (see FIGs. 1-3; column 3, line 10 to column 4,

line 56) discloses an apparatus comprising:

a vessel (i.e., cylinder or column **10**) defining an inlet **11** and an outlet **12**;

a plurality of pieces of an oxidizable material disposed within the vessel (i.e., a bottom section **16** containing silicon, see column 3, lines 22-48); and

a heater (i.e., an electrically heated furnace **13**) in thermal communication with the vessel **10** to heat the plurality of pieces of oxidizable material **16**.

The newly added limitation of the heater being, "configured to increase a temperature of said plurality of pieces of the oxidizable material as an oxide layer formed upon said plurality of pieces of the oxidizable material also increases," adds no further patentable weight to the claim, since a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Regarding claim 13, the apparatus of Smith et al. meets the claim, because silicon **16** is a material in which a resulting oxide layer is etchable upon exposure to an etchant, as defined by Applicants (for example, see Specification page 4, last paragraph). Please note that the resulting oxide layer and the etchant are not considered part of the apparatus.

Regarding claim 15, the pieces of silicon **16** are of different sizes (column 3, lines 42-51).

Regarding claims 16 and 17, the heater **13** is proximate to and at least partially surrounds

the vessel **10** (see figures), and the heater **13** is capable of maintaining the material **16** at a temperature between about 600 °C and 1200 °C (see column 3, lines 52-54).

Regarding claims 18 and 19, the vessel **10** is formed of a material that is non-reactive with the gas, such as quartz (see column 3, lines 54-58).

Instant claims 12-19 structurally read on the apparatus of Smith et al.

Response to Arguments

4. Applicant's arguments filed July 18, 2007 have been fully considered but they are not persuasive. At page 7, beginning at line 3, Applicant argues,

> "Neither of the cited references teaches or suggests a heater that is "configured to increase a temperature of said plurality of pieces of the oxidizable material as an oxide layer formed upon said plurality of pieces of the oxidizable material also increases", as now set forth by amended independent Claim 12. In contrast, the Cecil '522 patent describes a method of purifying a stream of gas, such as prior to deposition upon the substrate, by flowing the gas through a particulate bed of silicon housed within a vessel. The Cecil '522 patent further describes that the particulate bed of silicon and the vessel may be surrounded by an electrical resistance coil which heats the silicon. However, the Cecil '522 patent does not teach or suggest that the heater should be configured to increase the temperature of the particulate bed of silicon as an oxide layer is formed thereupon. Additionally, the Smith '767 patent describes a gas treatment apparatus that includes multiple stages, namely, a first stage containing silicon, a second stage containing lime or soda lime and an optional third stage containing copper oxide or copper oxide reagents. In the first stage, silicon granules or lumps are housed within a container that may be heated, such as by heat supplied through the walls of the container or alternatively by induction heating or an internally placed heat source. See column 3, lines 56-58 of the Smith '767 patent. Like the Cecil '522 patent, however, the Smith '767 patent does not teach or suggest a heater that is configured to increase the temperature of the silicon granules or lumps as an oxide layer is formed therefrom."

The Examiner respectfully disagrees. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). Apparatus claims cover what a device is, not what a device does. *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). In addition, a claim containing a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

According to the specification (e.g., at page 9, last paragraph), the heater may structurally comprise various types of heaters, where one suitable heater is a resistance coil that is insulated and wrapped about the vessel. Furthermore, Applicant's heater is configured to warm the oxidizable material to a temperature between about 600 °C and about 1200 °C, and preferably, between about 600 °C and 1000 °C.

In the instant case, the heater **31** of Cecil et al. is structurally capable of heating the pieces of oxidizable material to any temperature from about 300 °C to 1000 °C (see column 4, lines 24-34). Similarly, the heater **13** of Smith et al. is structurally capable of heating the pieces of oxidizable material to a temperature within the range of 200 °C and 700 °C (see column 3, lines 53-58). Thus, the heaters of Cecil et al. and Smith et al. are each structurally capable of being operated to increase the temperature of the oxidizable material as an oxide layer forms on

the oxidizable material, within the specified temperature ranges.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jal
September 13, 2007

Glenn Caldarola
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